

Serial No.: 10/605,382

Confirmation No.: 2381

Applicant: LAGERSTRÖM, Gunnar *et al.*

Atty. Ref.: 00173.0040.PCUS00

REMARKSALLOWABLE SUBJECT MATTER

Applicants thank the Examiner for noting that claims 13-16 and 25-31 are allowable.

REJECTION OF CLAIMS 1-5 AND 7 UNDER 35 USC §103

The Examiner rejected claims 1-5 and 17 under 35 USC § 103 as being obvious in view of Hulswitt and Davison *et al.* More specifically, with regard to independent claim 1, the Examiner asserts that Hulswitt shows "a welded plate heat exchanger using edge bar spacers to space the edges of the plates (see Figs. 7, 8). The only distinction between Hulswitt *et al.* and claim 1 is the use of dimples in Hulswitt *et al.* rather than corrugations to maintain plate spacing and increase heat transfer surface area of the plates. Davison *et al.* expressly recognizes the equivalence of these to well known means of improving rigidity and heat transfer in welded, stacked plate heat exchangers (see Figs. 2A, 2B), and it would have been an obvious substitution of known equivalents to employ corrugations in place of the dimples 41, 42, 44, 46 of Hulswitt *et al.* Applicants respectfully traverse the rejection.

When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

- (A) The claimed invention must be considered as a whole;
- (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;
- (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and
- (D) Reasonable expectation of success is the standard with which obviousness is determined. *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

"To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success.

Serial No.: 10/605,382

Confirmation No.: 2381

Applicant: LAGERSTRÖM, Gunnar *et al.*

Atty. Ref.: 00173.0040.PCUS00

Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). In this regard, "[i]t is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teaching of the prior art so that the claimed invention is rendered obvious." *In re Fritch*, 972 F.2d 1260; 1992 U.S. App. LEXIS 18470; 23 U.S.P.Q.2D (BNA) 1780. A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). Finally, if a proposed modification would render a prior art invention being modified unsatisfactory for its intended purpose and/or would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984); *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

In the instant case, Applicants respectfully submit that there is simply no teaching, suggestion or motivation to combine the teachings of Hulswitt et al. and Davison et al.

First, neither Hulswitt et al. nor Davison et al. explicitly or implicitly disclose, teach or suggest the combination propounded by the Examiner. In fact, each is wholly silent regarding any such combination/modification.

Second, Hulswitt et al. specifically describe a compact heat exchanger including, "protuberances extending into the passageways with the protuberances on each plate being staggered...so that the protuberances are prohibiting a direct line of flow of fluid between the point of ingress and the point of egress." (Col. 2, lines 1-13). In this regard, Hulswitt et al. specifically recite, "[i]t is still a further object of the present invention to provide a heat exchanger, as above, wherein the ingress and egress of the fluid is positioned so that there is no straight path through the space between the plates." (Col. 1, lines 59-63). "It should be noted that protuberances 41 are generally hemispherical in nature presenting smooth surfaces to the fluids passing through the passageways." (Col. 3, lines 44-47). Finally, "It should be evident that when

Serial No.: 10/605,382

Confirmation No.: 2381

Applicant: LAGERSTRÖM, Gunnar *et al.*

Atty. Ref.: 00173.0040.PCUS00

fluids enter the passageways 38 and 39 they are confronted by a unique pattern of interfering protuberances coming both downwardly from the plate above and upwardly from the plate below. The turbulence created as the fluids make their sinuous path from the input to the output greatly enhances the heat transfer characteristics of the device.” (Col. 5, lines 8-17). Accordingly, it is seen that Hulswitt *et al.* specifically disclose that protuberances are paramount to the inventive concept of the invention and are central to achieving the objects of the invention; that is, to present an interference pattern to produce turbulence.

Consequently, because the protuberances described by Hulswitt *et al.* are paramount for the proper operation of that invention, e.g. for “interfering” and creating “turbulence,” the substitution of protuberances with corrugations of the type described by Davison *et al.*, is wholly contrary to the principles of Hulswitt *et al.* and/or would render the invention described therein useless for its intended purpose. That is, substituting the protuberances of Hulswitt *et al.* with the corrugations described by Davison *et al.* would result in a heat exchanger comprising substantially planar and unobstructed channels therein, in complete contrast to the purposes and intents of Hulswitt *et al.*

Accordingly, there is no teaching, suggestion or motivation to make the combination/modification propounded by the Examiner such that claim 1, and those claims depending therefrom, are nonobvious.

Withdrawal of the rejection is respectfully requested.

Serial No.: 10/605,382

Confirmation No.: 2381

Applicant: LAGERSTRÖM, Gunnar *et al.*

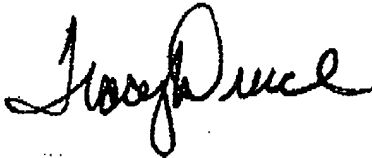
Atty. Ref.: 00173.0040.PCUS00

The undersigned representative requests any extension of time that may be deemed necessary to further the prosecution of this application.

The undersigned representative authorizes the Commissioner to charge any additional fees under 37 C.F.R. 1.16 or 1.17 that may be required, or credit any overpayment, to Deposit Account No. 14-1437, Order No. 00173.0040.PCUS00.

In order to facilitate the resolution of any issues or questions presented by this paper, the Examiner should directly contact the undersigned by phone to further the discussion.

Respectfully submitted,



Tracy Druce
Patent Attorney
Reg. No. 35,493
Tel. +1.713.571.3400